

REMARKS

Claims 1-5, 6 and 9-12 were rejected under 35 U.S.C. 102 over Komiyama. This rejection is respectfully traversed.

The Komiyama reference teaches a gas-sensitive composite material which is constituted by a porous dielectric having micropores and a thin film consisting of ultrafine metal particles dispersed in, and supported by, at the least the porous surface layers of the dielectric. The present invention, in contrast, relates to a three-dimensional periodic structure in which two substances having different dielectric constants are periodically distributed in a three-dimensional space. Thus, the claimed invention relates to a structure in which two substances are distributed in a regular order whereas the reference distributes pores randomly in a dielectric. In addition, there is no suggestion that the Komiyama structure would be periodic because the purpose of that invention is gas sensing and such a regular array is not required. Figure 1 in the reference also shows the air pores are not periodically distributed.

While unnecessary in view of the foregoing distinction, it is respectfully pointed out that "electroless plating film" is a product recitation and not a product-by-process limitation.

Claims 1-5, 7, 9-11 and 13 were rejected under 305 U.S.C. 102 over Zakhidov. This rejection is respectfully traversed.

The Zakhidov patent relates to a templating process in which one three-dimensional structure is used as a negative to form another three dimensional structure.

The templating results in a continuous structure. This is apparent from the patent as well as the article previously submitted.

The method described in the patent has four steps. First, monodispersed spheres of material A are assembled. Second, the spheres are joined together so that finite diameter necks connect neighboring particles leaving a void space in an opal-like structure. In the third step, the opal structure is used as a template for obtaining a three-dimensional periodic assembly of a second material B which is infiltrated into the opal. Finally, the initial opal material is dissolved or otherwise removed to obtain a hollow structure that is an inverse replica of the original structure. See, e.g., column 6, lines 33-65.

The infiltrating process can either be volumetric fill in which the material infiltrated substantially fills the void space of the opal or surface filling in which the material infiltrated to apply a coating on the interior surfaces of the opal (column 6, lines 52-57). In either case, a number of methods can be used to obtain infiltration such as melt or solution infiltration, chemical vapor deposition (CVD), gas phase condensation, electrochemical deposition and the like. As is apparent, the complete filling of the void volume in the volume templating process does not result in a discontinuous material. The surface filling procedures also do not result in a discontinuous material. For example, the electrodeposition process involves the electrodeposited material growing from the electrode coated side of the opal to the opposite side (column 12, lines 5-9). Other deposition processes such as melt or solution infiltration CVD and the like also provide a continuous material.

In the subcategory of patch templating, the surfaces of the void structure are covered with a surface coating of infiltrated material such that no uncoated regions exist

(column 12, lines 62-65). In the subcategory of particle loading, particles are infiltrated and aggregated together to form a mechanical robust structure which will not deaggregate and be lost when the host material A is extracted (column 13, lines 10-13). It will be appreciated that in order to form a mechanical robust structure, the infiltrated particles must be connected together, i.e., aggregated, and as a result, that material is not discontinuous. A discontinuous conductive film composed of a plurality of independent conductive particles or clusters of particles coarsely distributed cannot be mechanically robust.

There is nothing in Zakhidov which suggests that conditions of infiltration be controlled to realize a discontinuous layer. Given the fact that the infiltrate is to become the product after dissolution or other removal of material A, discontinuity is contraindicated. In none of the templating processes described in the reference is a conductive film having independent conductive particles or clusters of a plurality of conductive particles coarsely distributed therein formed. To the extent there may be conductive particles or clusters, they are continuous distributed so as to form a uniform conductive film which is mechanically robust. Accordingly, the structure made by Zakhidov is different from that claimed in the present case and an anticipation rejection is untenable. Further, the reference provides no reason for forming a conductive film having particles or clusters coarsely distributed at an interface between substances having different dielectric constants periodically distributed in a three-dimensional space and, therefore, a rejection based on obviousness is not tenable.

In view of the above amendment, applicant believes the pending application is in condition for allowance.

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Respectfully submitted,

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